

The Pan-Pacific Entomologist

VOL. XV, No. 4

October, 1939

NEW WESTERN EPHEMEROPTERA

BY VELMA KNOX MAYO

Goldfield, Nevada

During the spring and summer of 1938 I collected Mayflies in the Sierra Nevada of California, particularly in the Mother Lode region. All the material has not been completed for publication. The Ephemerella, which were found to be most common, are to be discussed in a subsequent paper along with several other new species.

Male imagos of *Callibaetis californicus* Banks were taken at Jackson, California, April 22, 1938. A male imago of *Siphonurus occidentalis* Eaton was taken from Dry Creek near Dry Town, California, May 30, 1938. *Rhithrogena flavianula* McDunnough, male and female imagos, were abundant on the Middle Fork of the Consumnes River in the Pi Pi Valley, Sierra Nevada (altitude 4000 ft.) on May 29, and June 5, 1938.

Among the new species collected, the following are here described: *Siphonurus maria*, n. sp., *Ameletus amador*, n. sp., and *Paraleptophlebia placeri*, n. sp.

I wish to acknowledge the kindness of Dr. James G. Needham of Cornell University in supplying paratypes of the western species in the Cornell collection. Dr. J. McDunnough, Chief, Division of Systematic Entomology, Ottawa, Canada, has contributed material and advice which have been indispensable in this work.

Siphonurus maria Mayo, new species

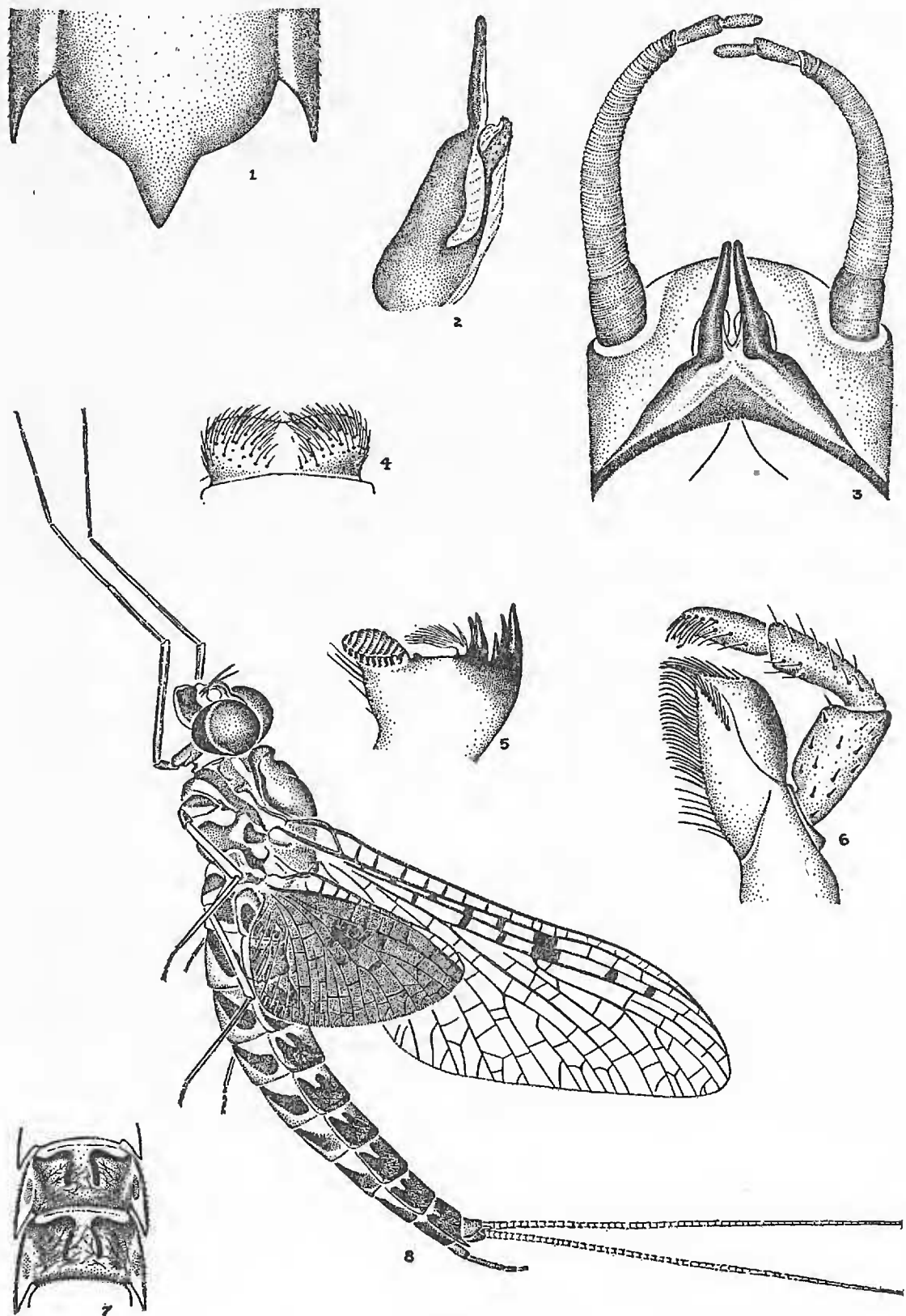
(Plate I)

Male (Figure 8). A dark, reddish-brown species. Head yellow with wide red-brown band across median carina. Basal segment of antenna light brown, pale apically. Ocelli milky white. Eyes with a white oblique band dividing the light brown portion above from the black portion below. Thorax brown; sutures tinged with olive green; posterior part of scutum yellowish near midline. Pleural sclerites reddish-brown, unsclerotized areas white. Prosternal sclerites tinged with pink; mesosternum reddish-brown; metasternum dark brown anteriorly, washed to olive. Fore legs shorter

than body, yellowish-brown. Anterior coxal sutures bright reddish-brown. Femora washed with light brown, fine dark spines along upper margins, joinings tinged with smoky gray; tibiae with heavier spines, lighter color toward apex; tarsi faintly tinged with light brown; fine black line at apex of tarsal segments. Middle and hind femora streaked with light reddish-brown, no spines; tibiae yellowish; tarsal segments tinged with light brown, the last segments darker. Wings as in figure 8. Hind wings coffee brown. Abdominal tergites brown, marked with dark tracheations. Segments one to seven light brown except for bright reddish-brown lateral triangles and sub-median spots which are connected to form a reddish-brown band on the posterior margin of each segment. Lateral margins and anterior triangles yellowish-white. Segments eight to ten darker; the lateral triangle on ninth segment blackish; postero-lateral spines present on tergite nine. Sternites pale yellowish-white except for the prominent reddish-brown oblique bands which are united anteriorly to form the usual U-shaped marks. Sternite nine dark reddish-brown except for small pale antero-lateral triangles. Forceps and forceps base purplish; forceps not angulate. Ventral lobes of penes smoky at tip; both lobes heavily sclerotized. Unsclerotized portions white, membranous (Figure 3). Distinct spines on dorsal lobes (Figure 2). Tails reddish-brown at base, white apically, joinings brown. Length: body 14 to 17 mm., tails 15 to 18 mm., wing 12 to 13 mm.

Female. Head yellowish; brown band across median carina. Median brown band between eyes; no oblique line across eyes as in male. Thorax as in male. Both wings with dark brown patch; in fore wing below bulla, in hind wing in radial space. Hind wing not darkened with amber as in male. Abdominal tergites more strikingly marked in female. In the living specimen the eggs give a fresh green tinge to segments one to seven. Reddish-brown lateral triangles and submedian spots as in male; on either side of mid-line are brown spots that become more prominent on tergites seven to ten, and appear as reddish-brown streaks on segments nine and ten. Segment nine with postero-lateral spines. Sternites as in male, with prominent reddish-brown U-shaped markings. Tails as in male. Sub-anal plate with a median spine (Figure 1). Length: body 15 to 20 mm., tails 15 to 20 mm., wing 14 to 17 mm.

Nymph. Mottled brown species. Thorax spotted, legs banded. Gills double on first two abdominal segments only. The pattern on tergites is bright reddish-brown (Figure 7). On fourth tergite a distinct white medial spot is conspicuous in the living specimen. Ventral pattern of the imago is prominent on sternites. The cast skin does not have the U-shaped marks, however. Mouthparts as in figures 4-6. Dark band across tails, slightly beyond middle. The male can readily be distinguished from the female by its smaller



Siphonurus maria Mayo, new species: Figure 1, sub-anal plate of female; 2, male genitalia, dorsal view showing two lobes of penis; 3, male genitalia; 4, labrum of nymph; 5, right mandible of nymph; 6, maxilla of nymph; 7, dorsal abdominal segments seven and eight of nymph; 8, male imago.

size and by the position of the eyes which almost touch medially. Length: body 16 to 20 mm.

Holotype, male imago (in alcohol), Jesus Maria Creek, Jesus Maria, California, May 26, 1938. Altitude 1800 ft. Reared from nymph. Allotype, female imago (in alcohol), same locality, May 29, 1938. Reared from nymph. Paratypes: four male imagos, Jesus Maria Creek, May 19, 1938; Dry Creek, near Dry Town, California, altitude 1500 ft., May 12, 22, 1938; nine female imagos, Jesus Maria Creek, May 24, 1938, and Dry Creek, May 7, 10, 18, 21, June 12, 1938. Also there were fourteen male subimagos taken as follows: Jesus Maria, May 10, 15, 22, 28, 1938; Dry Creek, May 11, 12, 14, 20, 22, 1938. Five female subimagos were taken from Dry Creek, May 7, 20, June 12, 1938.

Nymphal type, male (in alcohol), Dry Creek, near Dry Town, California, May 1, 1938; female (in alcohol), Dry Creek, May 30, 1938; nymphal paratypes, eighteen specimens, Jesus Maria Creek, Jesus Maria, California, April 6, May 10, 1938.

This species is related to *S. spectabilis* Traver in type of genitalia. However, the two species may readily be distinguished. *S. spectabilis* Traver is a pale species while *maria* is dark reddish brown. The wings of *maria* are more prominently speckled than those of *spectabilis* Traver. The dark brown hind wings in the male of *maria* are a distinct contrast to the pale hind wings in the male of *spectabilis* Traver. Moreover, *maria* has a prominent oblique band across the eye, whereas the eye of *spectabilis* Traver has no such oblique band. The forceps of *maria* are much longer than those of *spectabilis* Traver; the apical margin of forceps is not concave. Spines on the dorsal lobes of penes of *maria* are larger and more prominent than those of *spectabilis* Traver.

S. maria, n. sp., cannot be confused with a third western species, *S. occidentalis* Eaton. *Occidentalis* Eaton is a large, brown species, but has hyaline wings, no oblique band on eye, and a different type of genitalia.

Only two other species, *S. marshalli* Traver, and *S. mirus* Eaton have darkened hind wings in the male. Neither of these species has the prominent abdominal markings of *maria* nor is there a similarity in genitalic structure.

Ameletus amator Mayo, new species

(Plate II)

Male (Figure 12). Head dark brown; bases of antennæ white. Ocelli white, eyes greenish in living specimen. Pronotum blackish-brown laterally, lighter along midline. Mesonotum lighter; prescutum dark brown bordered anteriorly by unsclerotized areas of bright yellow. Scutum light reddish-brown tinged with olive along sutures. Scutellum bright yellow medially, blackish-brown laterally. Scutellum of metanotum distinctly yellow medially and blackish-brown laterally. Pleuron with striking color contrasts: episternum blackish; pleural trochantin light reddish-brown; some of unsclerotized areas tinged with rose; white around spiracles and wing base. Basisternal sclerite of prosternum blackish; cervical membrane distinctly white; furcisternum deep rose. Meso- and metasterna dark brown. Fore femur purplish brown; tibia and tarsus lighter brown. Middle and hind legs yellowish; femur and tarsal joinings tinged with light reddish brown. Wings speckled; longitudinal veins reddish brown; cross veins distinct and margined with smoky brown (Figure 12). First segment of abdomen dark brown laterally; medially and along posterior margin light brown with dark ganglionic markings; segments two to six yellow with postero-lateral triangles of reddish brown, these connected by reddish brown bands in the posterior half of each segment; with a small triangular marking on either side of midline which, on segments seven to ten, is extended as a brown line almost to the anterior margin. Segments seven to ten darker; lateral triangles blackish brown. Dark tracheations prominent on all tergites. Sternite one brown; two, lighter, with a patch on either side of midline. Sternites three to six semi-hyaline. On segment three the brown patches on either side of midline near anterior margin are very much smaller than on preceding segment, and on sternites four to six they gradually become indistinct and scarcely discernible. Sternites seven to nine bright reddish brown except for semi-hyaline triangular areas on anterior lateral margins. Sternite nine blackish laterally. Forceps and forceps base reddish brown with a purple tinge. Fourth segment of forceps very light. Penes light brown. Tails dark brown basally, light distally. Length: body 12 to 13 mm., wing 11 mm., tails 14 mm.

Female. More uniformly colored than male. Head brown with dark tracheations; white around bases of antennæ; blackish brown at bases of ocelli; pale yellow around eyes with reddish brown stripe at midline between them. Thorax lighter than that of male. Prothorax reddish brown with dark tracheations. Mesonotum light brown washed with olive along sutures. Prescutum dark brown bordered with bright yellow as in male. The rounded posterior humps on the scutum dark reddish brown bordered medi-

ally by light yellow. On either side of midline in this area is a red patch. Scutellum yellow with dark tracheations; laterally not as dark as in male. Fore legs brown; tibiæ and tarsi dark brown; middle and hind legs yellowish; femora washed with light reddish brown, with several dark tracheations; tibiæ yellow, tarsi light brown. Wings speckled but not as prominently as those of male. All abdominal segments reddish brown; first segment darker; lateral triangles and posterior borders of segments reddish; all segments with dark tracheations. Sternite one reddish brown, sternites two to six lighter brown and segments seven to nine dark reddish brown. Indistinct brown patches on either side of midline near anterior margin on segments two to six. Tails dark brown basally, whitish distally. Length: body 12 mm., wing 11 mm.

Nymph (Figure 9). The nymph has prominent dark reddish brown markings dorsally. The head and thorax mottled with brown. Legs washed with brown; not banded. Abdominal tergites marked as in figure 9. Sternites one to three pale; four and five marked with a wide, brown band extending almost to the lateral margins; anterior lateral triangles pale. Sternites six and seven pale except for prominent medial spots. Sternites eight and nine largely dark brown. Sternite eight with a prominent black ganglionic area. Tails with a wide, brown band medially. Length: body, male 10 mm., tails 5 mm.; female 13 mm., tails 6 mm.

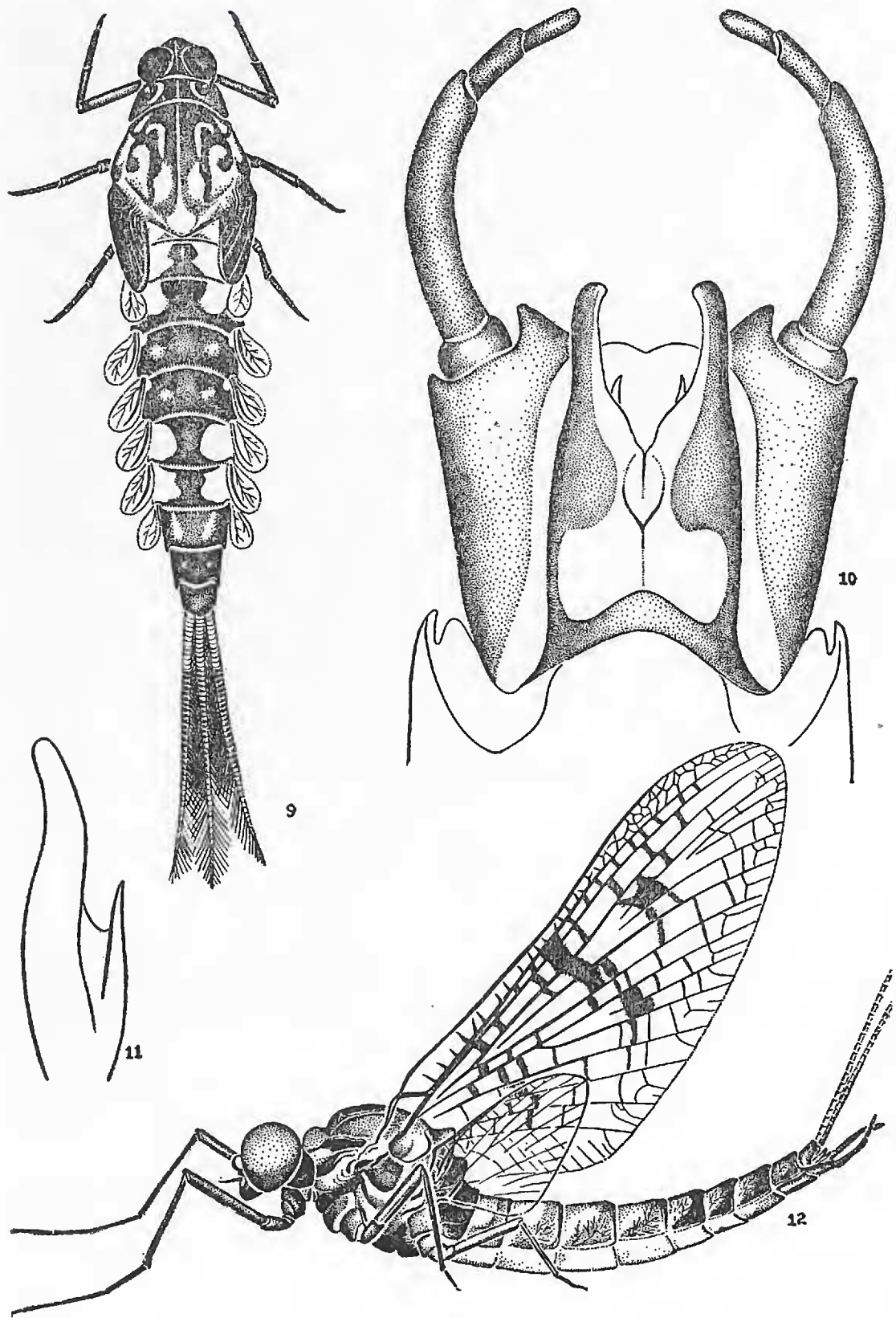
Holotype, male imago (in alcohol), Dry Creek near Dry Town, California, May 23, 1938. Reared from nymph. Allotype, female imago, same data as holotype.

Paratypes, six male imagos, Dry Creek, April 23, 1938, and May 3, 1938, and ten female imagos: Dry Creek, April 23, 1938; Dry Creek, May 5, 1938; Rancherea Creek near Amador, California May 7, 1938; American River, Sierra Nevada, altitude 4200 ft., July 26, 1938.

There were also forty-eight male subimagos and twenty-nine female subimagos taken from the same localities.

Nymphal type, male (in alcohol), Dry Creek, May 3, 1938, female same data as male, paratypes, six nymphs, Dry Creek, April 23, 1938. Cast skins from Jackson Creek, near Jackson, California, April 19, 1938; Rancherea Creek, May 5, 1938, and the American River, altitude 4200 ft., July 26, 1938.

This species is allied to *A. æquivocus* and *A. falsus* McDunnough. However, *amador* may readily be distinguished by the wings which are distinctly marked with dark patches (Figure 12). The wings of both *A. æquivocus* and *A. falsus* McD. are hyaline. *Amador* is considerably larger than either *A. æquivocus* or *A. falsus* McD. As in *æquivocus* McD., there are no dark



Ameletus amador Mayo, new species: Figure 9, mature nymph; 10, male genitalia; 11, lateral view of penis; 12, male imago.

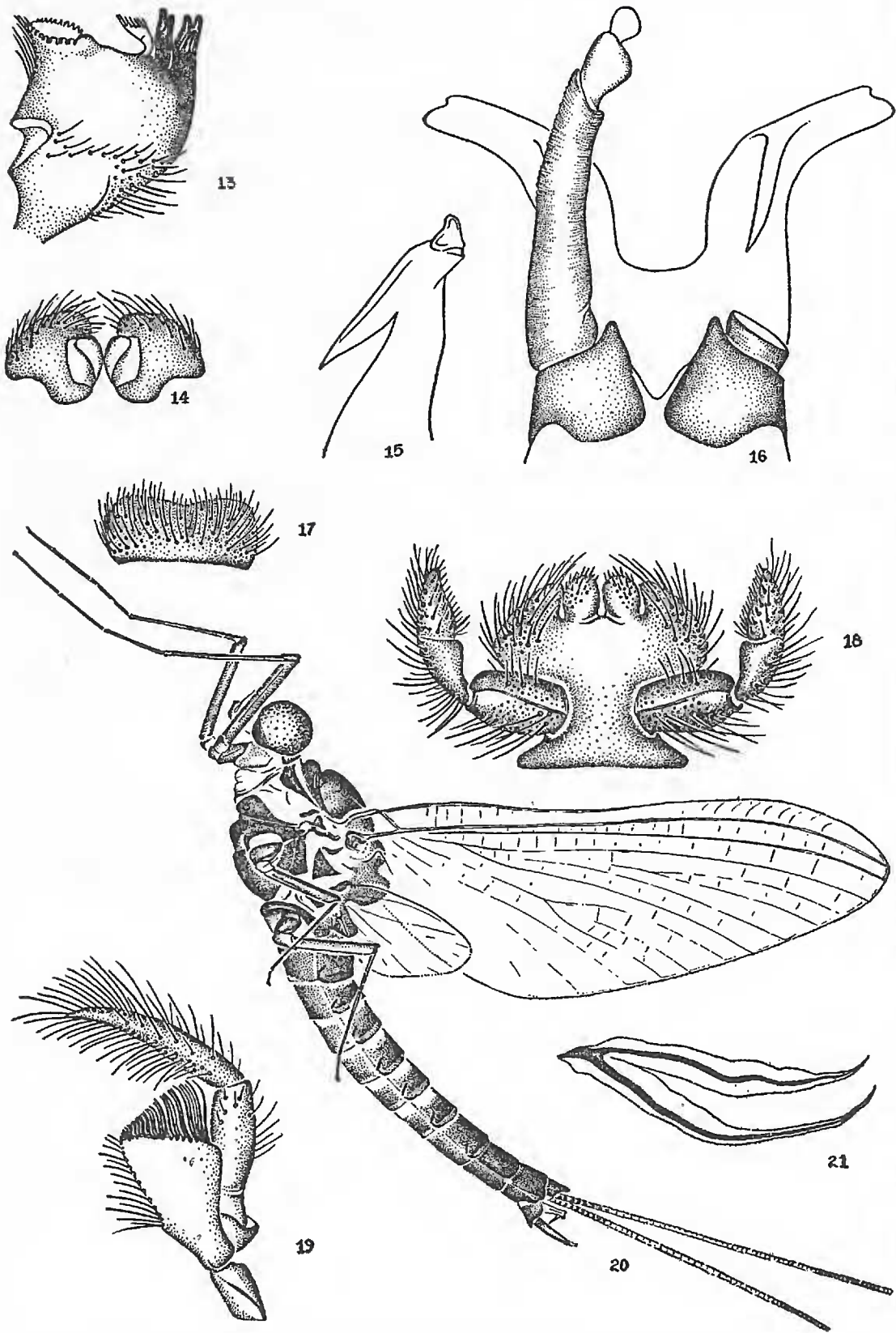
ganglionic marks on sternites. The genitalia more nearly resemble those of *A. æquivocus* McD. but differ in structural details of the penes (Figure 10).

Paraleptophlebia placeri Mayo, new species
(Plate III)

Male (Figure 20). Blackish brown species. Head blackish; ocelli white, upper eyes light orange; base of antennæ yellowish brown. Median furrow and parapsidal grooves of mesoscutum deep; all thoracic sclerites blackish brown; unsclerotized areas reddish brown. Legs reddish brown at base, lighter apically. Femora deep reddish brown, fore tibiæ lighter, joinings smoky, tarsi whitish. Tibiæ of middle and hind legs washed with brown at base, whitish apically. Middle and hind tarsi tinged with light reddish brown. Wings slightly milky, particularly in stigmatic area. Longitudinal veins in costal area amber colored. Pleural wing recess dark brown. Segment one of abdomen reddish brown. Segments two to seven washed with deep brown, but distinctly semi-hyaline along anterior borders. Middle segments of abdomen therefore apparently annulate. Mid-dorsal line light brown with darker brown areas on either side. A fine black penciling along postero-lateral margins of tergites one to seven joins a distinct black oblique streak on pleural fold. Segments eight to ten dark reddish brown. Mid-ventral ganglionic areas marked with reddish brown. Basal joints of forceps reddish brown, distal joints whitish. The genitalia (figures 15-16) are somewhat similar to those of *P. californica* Traver, but there are marked differences. The penes are separated by a wide U-shaped notch. There are no projections from the penes into this notch as in *P. californica* Traver. The lateral apical processes are very long and a distinct contrast to those of *P. californica* Traver. The long reflex spur is wide at base and acute at tip. Tails light brown at base, whitish distally. Length: body 8 to 9 mm., wing 7.5 mm.

Female. More uniformly brown than male. Prothorax yellowish brown, darker laterally. Fine penciling along mid-dorsal line of pronotum. Mesoscutum reddish brown; not blackish as in male. Pleural sclerites reddish brown, unsclerotized areas yellowish brown. Legs yellowish brown. Wings slightly milky, venation more prominent than in male. Veins amber colored in costal area. All abdominal segments opaque, reddish brown. Light tracheations laterally on tergites. Tracheations surrounded by a brown granulated area which extends to the anterior margin of each tergite. As in male there is a fine black penciling along postero-lateral margins of tergites one to seven and an oblique streak on pleural fold. Tails brown at base, lighter distally. Length: body 8.5 mm., wing 8 mm.

Nymph. Brown species distinctly spotted on head, thorax and abdomen. Mouthparts as in figures 13, 14, 17-19. Lateral spines



Paraleptophlebia placeri Mayo, new species: Figure 13, right mandible of nymph; 14, hypopharynx of nymph; 15, male genitalia, reflex spur; 16, male genitalia; 17, labrum of nymph; 18, labium of nymph; 19, maxilla of nymph; 20, male imago; 21, gill of nymph.

on segments eight and nine. No branchlets on gill tracheæ (Figure 21). Legs banded with darker brown. Tails light brown. Length: body 8 to 10 mm.

Holotype, male imago (in alcohol), Dry Creek near Dry Town, California, May 12, 1938. Reared from nymph. Allotype, female imago (in alcohol), same data as holotype.

Paratypes, two male imagos, Jackson Creek near Jackson, California, May 21, 1938, and Amador Creek near Amador, California, May 28, 1938, reared from nymphs, and one female imago, Dry Creek, May 12, 1938, reared from nymph. Also one male subimago, Amador Creek, May 25, 1938; four female subimagos, Dry Creek, May 12, 1938; Amador Creek, May 29, 1938.

This species resembles *P. californicus* Traver, but may be distinguished chiefly by the annulated appearance of the abdomen, the milky wings, and the marked genitalic differences.

REFERENCES

- McDunnough, J., 1936. Further notes on the genus *Ameletus* with descriptions of new species. *Canadian Entomologist*, Vol. LXVIII, pp. 207-211.
- 1938. New species of North American Ephemeroptera with critical notes. *Canadian Entomologist*, Vol. LXX, pp. 23-34.
- Needham, Traver, Hsu., 1935. *Biology of Mayflies*, Comstock Publishing Co., Ithaca, N. Y.
- Upholt, W. M., 1936. A new species of Mayfly from California. *Pan-Pacific Entomologist*, Vol. XII, No. 3, pp. 120-122.
- 1937. Two new Mayflies from the Pacific coast. *Pan-Pacific Entomologist*, Vol. XIII, Nos. 1-2, pp. 85-88.

AN ANCIENT BEETLE

Mr. Wayne K. Davis has recently presented me with a living specimen of *Buprestis aurulenta* L. which, with several others, emerged May 28, 1939, from a built-in sideboard on the premises of Mrs. Frank Cook, 1831 Tenth Avenue, Oakland, Calif. This sideboard was installed in the home when it was built over thirty years ago. Undoubtedly the eggs were laid some time previous to the milling of the wood and the building of the sideboard so that this beetle and its companions had spent a period of over thirty years before reaching maturity. I have known of several cases of retarded development for this same species, of from twelve to twenty years, but none quite so long as this.—Edwin C. Van Dyke.